BEETHOVEN SANTOS

Software Engineer

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Brazilian, 36 years old, bachelor degree in physics and PhD in astronomy, with sixteen years of experience in software development for scientific research in the fields of physics and cosmology. Six years of experience in Python, nineteen years in high performance scientific computation using mostly Fortran (version 90 and above) and, sometimes, C. I also have sixteen years using Linux (several distributions). Technical experience aligned with a focused and critical conduct.

EXPERIENCE

Instituto Brasileiro de Economia - Fundação Getulio Vargas (IBRE-FGV) (RJ) (2018 – 2019)

Software Developer / Data Scientist (freelancer)

I worked with software development, data analysis and data visualization to support several studies required by the institution. Main software languages: Python and R.

Observatório Nacional (Rio de Janeiro, Brazil) (Since 2014)

Postdoctorate in astronomy (cosmology)

I applied Bayesian inference to investigate and compare several cosmological scenarios. All relevant code were developed in Python.

McGill University (Montreal, Canada) (2013 – 2014)

Postdoctorate in physics (cosmology)

I investigated the detection viability of cosmic string wakes in several cosmological datasets. This research was made by using some statistical tools to analize topological structures like, for instance, the Minkowski functionals. Main software language: Python.

Observatório Nacional (Rio de Janeiro, Brazil) (2009-2013)

PhD student in astronomy (cosmology)

I studied the observational and theoretical aspects of modified gravity theories by using several cosmological datasets and applying the χ^2 minimization method to estimate the parameters of the models investigated. Main software languages: Fortran (for numerical computations) and Python (for data visualization).

Observatório Nacional (Rio de Janeiro, Brazil) (2007-2009)

Master student in astronomy (cosmology)

I applied least square methods to estimate cosmological parameters of models that try explain the accelerated expansion of the Universe (dark energy). Main software language: Fortran.

Universidade Federal de Alagoas (Maceió, Brazil) (2003-2007)

Scientific Initiation in physics

I applied linear and nonlinear regression techniques to study how long-range correlations in the energy distribution affects the electronic transport properties in an atomic system. Main software language: C.

TEACHING

- *Astrostatistics* — Observatório Nacional (Brazil) (2018)
- Short course titled *Python for Scientists* — Observatório Nacional (Brazil) (2017)

ACHIEVEMENTS AND PROFESSIONAL ACTIVITIES

- Three scholarships (2003-2013).
- Two research fellowships (2013-2018).
- 15 peer-reviewed scientific papers (2006-2019).
- Article reviewer for the Canadian Journal of Physics (2015-Present).
- Board member of a PhD qualifying exam at Observatório Nacional (Brazil) (2017).
- Attended more than 15 international conferences (2003-2016).
- Participation in an brazilian TV program about Gravitational Waves (2015).

EDUCATION

PhD in astronomy

Observatório Nacional (Brazil)

March 2009 – April 2013

Thesis: *Observational Aspects in $f(R)$ Theories in Palatini Formalism*

MS in astronomy

Observatório Nacional (Brazil)

March 2007 – February 2009

Dissertation: *The Sunyaev-Zel'dovich Effect and Dark Energy*

BS in physics

Universidade Federal de Alagoas (Brazil)

March 2003 – February 2007

Monography: *Transport Properties in the Unidimensional Anderson Model with Correlated Disorder*

SKILLS

Python
Linux
Fortran
C
Shell Script (Bash)
SQL
Git
HTML
CSS
PHP
Julia
Go
R

Bayesian statistics
Frequentist statistics

LANGUAGES

English:
Reading
Writing
Speaking
Listening

Spanish:
Reading
Writing
Speaking
Listening